

4.3 Intellectual Capital

	Management approach	Principal activities 2017	Outlook
Promotion of R&D	<ul style="list-style-type: none"> Iberdrola is a leading multinational group in the energy sector thanks to an innovative strategy based on a strong commitment to clean energy, smart grids, efficient energy storage, the development of custom-tailored solutions for customers, and digital transformation. 	<ul style="list-style-type: none"> More than €246 million of investment in R&D&I in 2017, a 17% increase over 2016. Launch of the <i>Iberdrola University Programme</i>, which gathers together all activities with the academic world. University chairs, R&D&I projects, training and the <i>Young Entrepreneurs initiative</i>. Wager on internal talent through the <i>Accelerator project</i>, identifying key factors of the utility of the future. Strengthening of the <i>Innovation with Suppliers Programme</i>. Receipt of <i>Best Digital Transformation Award</i> in 2017. 	<ul style="list-style-type: none"> Compliance with <i>R&D&I 2015-2017 Plan</i> and definition of new <i>R&D&I Plan 2018-2022</i>. Iberdrola will continue to wager on innovation as one of the foundations for successfully facing the future energy scenario, promoting energy efficiency, decarbonisation and the electrification of the economy. The wager on digital transformation will be key, with a planned investment of €4,800 million between 2018-2022.
Efficiency and new products and services	<ul style="list-style-type: none"> Continuous optimisation of our operations, management of the lifecycle of facilities and equipment, reduction in operating and maintenance costs, and decreasing environmental impact. Development of new and competitive products and services that adapt to an increasingly global and digitised market, the main goal of which is to meet the needs of customers. 	<ul style="list-style-type: none"> There are currently more than 200 projects to promote sustainable development, the encouragement of renewable energies and emerging technologies. Improvement of the customer experience, increasing customer engagement. Launching innovative campaigns and projects towards increased personalisation of content and offers based on consumption. Delivery of proactive communications in real time and use of online self-service, with quick and simple online contracting. 	<ul style="list-style-type: none"> As a result of its commitment to innovation, digitisation and the on-going search for excellence and quality, Iberdrola has designed unique products and services for its more than 16 million customers. It will continue investing to offer customers two-way communication and a personalised service that exceeds their expectations and meets their specific needs.
Disruptive technology and business models	<p>Through the <i>Iberdrola-PERSEO</i> international start-up programme, there has been more than €50 million invested since 2008 in technologies and new disruptive business models, which ensure the sustainability of the energy model. Lines of activity:</p> <ul style="list-style-type: none"> Technologies favouring the integration of renewable energies: flexibility and storage. Aggregation and management of distributed energy resources (batteries, solar, etc.). Innovative solutions for customers (demand-side management, digital solutions, etc.). Advanced technologies for operation and maintenance of energy assets. Electromobility: charging infrastructures and new solutions. 	<ul style="list-style-type: none"> Iberdrola was recognised by the European Commission among corporations best working with start-ups within the framework of the <i>Start-up Europe Partnership initiative</i>, also receiving the special <i>Start-up Procurement Award</i> prize for its innovation with suppliers programme. Investment in the equity of the U.S. company <i>Innowatts</i>, focused on the development of digital solutions and innovation for the energy sector through its analysis and artificial intelligence platform. It has offices in Houston, Silicon Valley and India, and it has offices and more than 14 million smart meters in its artificial intelligence platform. Investment in the company <i>Iluméxico</i>, dedicated to lighting and electrification in rural areas of Mexico. This investment is a very significant contribution to reducing the number of people without access to electricity, with an estimated 250,000 people who can benefit from this initiative in the coming years. 	<ul style="list-style-type: none"> Ensure Iberdrola's access to the energy technologies of the future. Foster entrepreneurship and the development of an innovative entrepreneurial fabric within the energy sector. Investment in initiatives with a high social and job creation component. Establish alliances with key technology providers for Iberdrola (<i>Open Innovation Ventures</i>).

Highlight the value of the company's intangible assets

Main R&D&i research projects

- Renewable energy**
 - There are noteworthy projects to improve the efficiency of assets. These include the European *ROMEO* project for the early detection of failures in the turbines based on “big data” techniques.
 - In the offshore wind area, the installation of turbines at the *Wiking* offshore wind farm, as well as the substation, with an innovative design, have been completed.
 - Projects for the integration of renewable energies include *ESS2GRID*, which analyses the use of battery storage systems at renewables facilities.
- Smart grids**
 - The *UPGRID* project has been completed, strengthening the operation and maintenance of low-voltage grids in view of the risks of integrating distributed generation. There is also *GRIDSTORAGE*, developing an advanced micro-grid and storage model.
 - In the United Kingdom, the *Fusion* and *LV Engine* projects are directed towards the optimisation of low-voltage grids to achieve a more flexible system.
- Clean generation**
 - There has been completion of the *CO₂ Formare* project to avoid macrofouling of the cooling systems of the generation plants, reducing environmental impact.
 - The *Prexes* project has been successfully carried out, with the development of a model for predicting expansion in concrete hydraulic structures.
- Customers**
 - Customised plans (*Planes a tu Medida*), in which customers can choose the 8 hours of the day that best suit their consumption (at a lower price), which can be different for each day of the week.
 - *Smart solar*: Distributed generation solution for self-consumption, providing a personalised online offer based on an analysis of consumption and the location of the facility.
 - In the United Kingdom, there is *PowerUp*, which allows consumers to buy gas or electricity in packages up to 180 days in advance at a pre-established price.

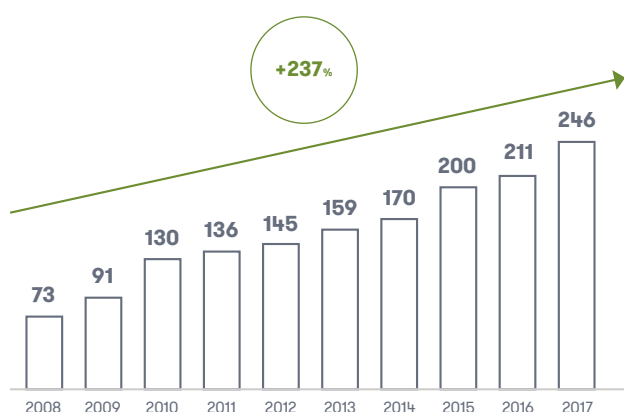
Transferring knowledge and attracting talent - Universities

Iberdrola has launched a *University Program*, which focuses its efforts on strengthening the relationship between the company and the academic world, aimed at attracting talent and transferring knowledge. Iberdrola has signed agreements with major universities in the countries in which it has a presence.

The programme includes development of the *Young Entrepreneurs* initiative, to develop talent and the entrepreneurial skills of the students. There were 5 “hackathons” and “bootcamps” in 2017 with 800 entrepreneurs and the collaboration of more than 100 mentors.



Investments in R&D&i (€M)



% R&D&i investment by strategic area

